

**IN THE ABSTRACT:**

Please replace the abstract with the following:

An invasive device 17, such as a catheter, is connected to a supply and control unit via a connection conductor 21 for the transfer of power supply energy and/or LF signals to and from an electrical circuit 20 in the distal part 18 of the device. During operation the connection conductor traverses the homogeneous magnetic field and the RF field of the MRI apparatus; this may give rise to heating of the connection conductor and/or to a disturbance of said fields. In order to mitigate these drawbacks, the connection conductor in accordance with the invention is subdivided into mutually separated segments 22-i, each of which is much shorter (for example, 1/20) than the wavelength of the RF field in the apparatus; the segments are separated from one another by separating elements 23-i (self-inductances) that provide a high inductance for said RF frequencies and a low inductance for comparatively low frequencies.

**Fig. 2**